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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/532,786	03/22/2000	Nobuhiko Hayashi	000351	8588
23850	7590	08/08/2005	EXAMINER	
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006			RODRIGUEZ, ARMANDO	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/532,786	<b>Applicant(s)</b> HAYASHI ET AL.	
	<b>Examiner</b> ARMANDO RODRIGUEZ	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,9-11 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 3,7,12,13,15 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

Claims 1-4, 6-13 and 15-20 are pending.

Claims 5 and 14 are canceled.

The claim objection of claims 1 and 11 are withdrawn based on applicant's amendment filed on May 26, 2005.

The 35 USC 112 second paragraph rejection of claims 1 and 11 has been withdrawn based on applicant's amendment filed on May 26, 2005.

The 35 USC 102 and 103 rejections have been withdrawn based on applicant's amendment filed on May 26, 2005.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 recites the limitation "said nitride portion" in line 16. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "said nitride portion" in 10. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Bour et al (US 2003/0053504).

Regarding claim 1,

Figure 1 illustrates a semiconductor laser having a cladding layer (121) [applicant's first nitride based layer] made with Ga and N and having a quantum well (145) [applicant's emitting layer], figure 1 illustrates a cladding layer (125) [applicant's ridge portion] made with Al, figure 1 illustrates a burying layer (155) [applicant's current blocking layer], which forms an opening with a width smaller than the ridge and in paragraphs [0016] and [0018] describes the function of the burying layer as carrier confinement and favors current injection into the quantum well, which implies the function of current confinement layer, the figure also illustrates a capping layer (185) [applicant's second nitride layer] made with Ga and N, where the burying layer is in contact with the upper surface of the capping layer.

Claim 1 has been considered a product-by-process claim based on applicant's limitation of "a transverse growth technique". Applicant is reminded determination of patentability is based on the product itself and does not depend on its method of production, See MPEP 2113.

Regarding claims 2, 4, 9,

Paragraph [0016] discloses the burying layer [applicant's current blocking layer] as made with Al, Ga and N.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bour et al (US 2003/0053504) as applied to claims 1 and 2 above, and further in view of Sugiura et al (PN 5,932,896).

Regarding claim 6,

The current blocking layer of Bour et al illustrated in figure 1 has the composition of AlGaIn, as described paragraph [1116].

Bour et al is silent as to the current blocking layer containing the composition of indium and gallium.

However, the use of current blocking layers having the composition of indium and gallium is well known in the art and is described by Sugiura et al in column 24 lines 7-9, as a desired composition, which implies a design preference.

Therefore, it would have been obvious to one of ordinary skill in the art to provide the nitride semiconductor laser of Bour et al with the current blocking layer of Sugiura et al because it would provide current blocking.

Claims 10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bour et al (US 2003/0053504).

Regarding claims 10 and 18,

The current blocking layer of Bour et al illustrated in figure 1 has the composition of AlGa<sub>N</sub>, as described paragraph [1116].

Bour et al is silent as to current blocking having multiple layers.

However, in accordance with In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), the court has held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. See MPEP 2144.04 VI.

Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bour et al (US 2003/0053504) in view of Burnham et al (PN 4,433,417).

Figure 1 illustrates a semiconductor laser having a cladding layer (121) [applicant's first nitride based layer] made with Ga and N and having a quantum well (145) [applicant's emitting layer], figure 1 illustrates a cladding layer (125) [applicant's ridge portion] made with Al, figure 1 illustrates a burying layer (155) [applicant's current blocking layer], which forms an opening with a width smaller than the ridge and in paragraphs [0016] and [0018] describes the function of the burying layer as carrier confinement and favors current injection into the quantum well, which implies the function of current confinement layer, the figure also illustrates a capping layer (185) [applicant's second nitride layer] made with Ga and N, where the burying layer is in contact with the upper surface of the capping layer.

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Bour et al does not explicitly disclose a transverse growth technique.

However, the use of the transverse growth technique is well known in the art as evident by Burnham et al in column 6 lines 7-10 describes transverse growth for nonplanar surfaces.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine the teaching of Burnham et al with the semiconductor laser of Bour et al because it would provide growth of the current blocking layer on the angled surface of the ridge.

Regarding claim 17,

Paragraph [0016] discloses the burying layer [applicant's current blocking layer] as made with Al, Ga and N.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bour et al (US 2003/0053504) as applied to claims 1 and 4 above.

Regarding claim 19,

Bour et al does illustrates a current blocking layer forming a space on the top surface of the ridge, which has a width smaller than the width of the top surface of the ridge, thereby the difference in width will provide a ratio of the width less than 1 and greater than zero.

Bour et al does not explicitly disclose a ratio of not less than 0.1 nor more than 0.95.

However, in accordance with MPEP 2144.05 Obviousness Ranges:

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bour et al (US 2003/0053504) in view of Burnham et al (PN 4,433,417) as applied to claims 11 and 12 above.

Regarding claim 20,

Figure 1 of Bour et al illustrates the current blocking layer made with AlGaN, as described in paragraph [0016].

Bour et al does illustrates the current blocking layer forming a space on the top surface of the ridge, which has a width smaller than the width of the top surface of the ridge, thereby the difference in width will provide a ratio of the width less than 1 and greater than zero.

Bour et al does not explicitly disclose a ratio of not less than 0.1 nor more than 0.95.

However, in accordance with MPEP 2144.05 Obviousness Ranges:

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)



***Allowable Subject Matter***

Claims 3, 7, 12, 13,15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MINSUN HARVEY can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
ARMANDO RODRIGUEZ  
Examiner  
Art Unit 2828

  
MINSUN HARVEY  
SUPERVISOR  
Art Unit 2828

AR/MH